



Engineer Equipment

Records and Forms

Terminal Learning **Objective**

- Given a period of instruction, for you the student to be able to identify the types and uses of maintenance records and forms.



Enabling Learning

Objective

- With the aid of references, identify the TM-4700.
- With the aid of references, identify and be able to fill out the NAVMC 10560.
- With the aid of references, identify and be able to fill out the NAVMC 10245.
- With the aid of references, identify and be able to fill out the NAVMC 10925.

Responsibilities

- It is your responsibility to ensure you are using the correct record or form and that you are using it correctly.
- TM 4700-15/1 and UM 4790-5 are the references that provide guidance in regards to the use of maintenance records and forms.

NAVMC 10560

LTI Sheet

Purpose

- Provides a checklist for performing and recording preventive maintenance checks and services (PMCS) and Limited Technical Inspections (LTI).

Responsibilities

- The equipment owner, user or custodian is responsible for initial preparation.
- A template is generally used to assist in preparing the form for Preventive Maintenance and inspections.

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A	SERVICE SYMBOLS (SS) A - ADJUST C - CLEAN I - INSPECT S - SERVICE T - TIGHTEN		WORKSHEET FOR PREVENTIVE MAINTENANCE AND TECHNICAL INSPECTION FOR ENGINEER EQUIPMENT				LEGEND (SS) N/A - NOT APPLICABLE M - MISSING ✓ - SATISFACTORY X - ADJUSTMENT REQUIRED XX - REPAIR REQUIRED XXX - REPLACEMENT REQUIRED D - IMMEDIATE D/L U - UNSATISFACTORY MR - MODIFICATIONS REQUIRED	
	APPLICABLE REFERENCES (SEE INSTRUCTIONS ON PAGE 6) TM 4700 - 15/1_ (TACTICAL EQUIPMENT RECORD PROCEDURES)							
	NOMENCLATURE Tractor, Medium, Full Tracked		MAKE Caterpillar		MODEL D7G			
	ORGANIZATION 7th ESB		DATE 3249		HOURS 832	MILES N/A	REGISTRATION NO 586655	
	ENGINE MAKE / MODEL (IF APPLICABLE, LIST BOTH ENGINES)		ENGINE SERIAL NO. (IF APPLICABLE, LIST BOTH ENGINES)		ATTACHMENTS Winch			
1.	Caterpillar 3306	1.	08Z40429	MAKE AND MODEL Caterpillar / Model 57				
2.	(USE ADDITIONAL FORM)	2.	(USE ADDITIONAL FORM)	SERIAL NO. 29V04780				
<div><input checked="" type="checkbox"/> EQUIPMENT RECORD FOLDER</div> <div><input checked="" type="checkbox"/> PUBLICATIONS AVAILABLE</div> <div><input checked="" type="checkbox"/> APPEARANCE</div> <div><input checked="" type="checkbox"/> OPERATOR'S DAILY PM</div> <div>N/A FIRE EXTINGUISHER</div> <div>N/A TOOLS AND EQUIPMENT</div>								

B	REMARKS AND RECOMMENDATIONS / DISPOSITION INSTRUCTIONS			

C	ITEM COST (CURRENT)	EQUIPMENT AGE	REPAIR LIMIT		EST. COST THIS REPAIR	CONDITION CODE
	\$	YEARS MONTHS	% ONE TIME	COST LIMIT	\$	

D	S	ENGINE AND POWER UNIT	D	S	ENGINE AND POWER UNIT (ELECTRICAL SYSTEM)																		
1	✓	CYLINDER HEAD (GASKET, LEAKS, CRACKS)	26	✓	EMERGENCY SHUTDOWN DEVICES (CONNECTIONS, LINKAGE)																		
2	XXX	EXHAUST SYS. (MANIFOLD, MUFFL., CONNECTION, <u>PIPE</u>) EXHAUST BACK PRESSURE PSI (Hg) SMOKE ANALYSIS. (BLACK, BLUE, WHITE) Rain cap missing	27	N/A	SPARK PLUGS (CRACKS, DISCOLORATION, FOULING)																		
3	✓	VALVE MECHANISM (COVERS, SPRINGS, ROCKER ARMS, PUSH RODS, CLEARANCE)	28	✓	BATTERY (CASE, TERMINALS) SPECIFIC GRAVITY																		
4	N/A	COMPRESSION TEST (TI OR MALFUNCTION ONLY) <table><tr><td>N</td><td>O</td><td>T</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td>T</td><td>A</td><td>K</td><td>E</td><td>N</td><td></td></tr></table>	N	O	T										T	A	K	E	N		29	✓	BATTERY (BOX, HOLD DOWNS, CABLES, CONNECTIONS)
N	O	T																					
			T	A	K	E	N																
			30	✓	BATTERY SLAVE RECEPTACLE																		
5	✓	CRANKCASE (LEAKS, OIL LEVEL) BREATHER (CLEAN)	31	✓	BATTERY CHARGING GENERATOR / ALTERNATOR (MOUNTING, CONNECTION, BRUSHES, COMMUTATOR) OUTPUT 26V — 1000PM																		
6	✓	OIL FILTER / COOLERS (LEAKS, CLEAN)	32	✓	VOLTAGE REGULATOR (SEAL CONNECTIONS, GROUND)																		
7	✓	OIL PUMP PRESSURE/TEMPERATURE 28 PSI 210 F.	33	N/A	DISTRIBUTOR / MAGNETO (CAP, ROTOR, POINTS, MOUNTING, CONNECTIONS)																		
8	✓	ANTI FREEZE (SPECIFIC GRAVITY) PROTECTED TO 40 F.	34	N/A	IGNITION COIL (MOUNTING, CABLE)																		
9	XX	<u>WATER PUMP, FAN, SHROUD</u> (LEAKS, ALIGNMENT, MOUNTING) Replace cover gasket	35	✓	STARTER (MOUNTING, CONNECTIONS, BRUSHES, COMMUTATOR)																		
10	✓	RADIATOR (CORE, SHUTTERS, HOSES, CAP) (LEAK, RESTRICTION, DAMAGE)	36	XX	LIGHTS (<u>CONNECTIONS</u> , MOUNTING) DASH, BLACKOUT, HEAD, TAIL, CLEARANCE <u>WORKING</u> Broken wire R/S																		
11	XXX	ACCESSORY DRIVE BELTS AND PULLEY (<u>CRACKS</u>) ROT, ALIGNMENT Fan belts	37	✓	WIRING HARNESS (CONNECTION, INSULATION)																		
12	✓	GOVERNOR AND LINKAGE (LINKS, ALIGNMENT, OPERATION)	38	✓	SWITCHES (MOUNTING, CONNECTIONS)																		
13	N/A	OVERSPEED GOVERNOR (CONNECTIONS, OPERATION)	39	✓	METERS (VOLT, AMP, HOUR, ODOMETER, TACHOMETER, SPEEDOMETER) (MOUNTING, CONNECTIONS)																		
14	✓	AIR BOX (DRAINS, RESTRICTIONS, GASKETS) AIR BOX PRESSURE ____ PSI (Hg)	40																				
15	✓	AIRCLEANER / PRECLEANERS (LEAKS, CONNECTIONS, MOUNTING, RESTRICTIONS)	41																				
16	N/A	CARBURETOR / LINKAGE (LEAKS, ALIGNMENT)	42																				
17	✓	BLOWER TURBOCHARGER (LEAKS, SEALS, MOUNTING, SCREEN)	43																				
18	✓	INJECTORS, INJECTOR PUMPS (LEAKS, FILTERS, RESTRICTIONS)	E	S	POWER TRAINS																		
19	✓	FUEL TANK, CAP, MOUNTING (VALVES, LINES, TRAPS, SCREEN)		S																			
20	✓	FUEL FILTER (LEAKS, RESTRICTION, DRAIN)	1		UNIVERSAL JOINTS, DRIVE SHAFTS																		
21	XXX	FUEL PUMP (<u>HOUSING</u>) LINES, CONNECTIONS, SEDIMENT BOWL Priming pump handle broken	2		GEAR HOUSINGS (CASES, GASKETS, SEALS, LEAKS, OIL LEVEL)																		
22	✓	FUELS LINES / CONNECTIONS (CRACKS, LEAKS)	3		GEARS AND PINIONS																		
23	✓	GAUGES (FUEL, OIL TEMP, PRESSURE) OPERATION	4		BEARINGS, SHAFTS AND DRUMS																		
24	✓	STARTING AID (CONNECTIONS, LINES)	5		TRANSMISSION, TRANSFER CASES (GASKETS, SEALS, LEAKS, OIL LEVEL) HARD TO SHIFT, NOISE																		
25	N/A	ENGINE AIR COMPRESSOR (GASKETS, SEALS, BREATHERS)	6		DRIVE SPROCKETS (CHAINS, BELTS, PULLES)																		

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E	S S	POWER TRAINS (CONTINUED)	F	S S	FRAME AND SUSPENSION (CONTINUED)
7		STEERING AND TRAVEL CLUTCHES	8		BUCKET / BLADE LIFT ARMS
8		FINAL DRIVE DIFFERENTIAL (HOUSING, GASKETS, SEALS, OIL LEVEL)	9		BUCKET / BLADE SIDE ARMS
9		POWER TAKE OFF UNIT	10		TIE RODS, LINKAGE, BOOTS AND SEALS
10		JAW OR PIN CLUTCH	11		FULCRUM ARMS, REACH ARMS, LINKAGE
11		OPERATING CLUTCHES AND BRAKES	12		CAB HOUSING (PANELS, DOORS, BRACKET, HINGES, FASTENERS)
12		TRAVEL AND SWING LOCK	13		BASE SKIDS (BENTMEMBERS, WELDS, LIFTING DEVICES)
13		SERVICE BRAKES	14		LEVELS, PEDALS, LINKAGE, CABLES, CONTROLS
14		PARKING / EMERGENCY BRAKES	15		STEERING OR LEANING WHEEL
15		SHOES, PISTONS, BANDS	16		STEERING GEAR ASSEMBLY
16		DRUMS, DISCS	17		BOOSTER STEERING ASSEMBLY
17		PEDALS, LINKAGE, CABLE, LINES AND FITTINGS	18		SWING LOCK
18		MASTER CYLINDER (POWER PACK) (SLAVE CYLINDER)	19		HYDRAULIC CYLINDERS (LEAKS, SEALS, DAMAGED)
19		AIR TANK	20		HYDRAULIC LINES AND CONNECTIONS (LEAKS, DAMAGE)
20		AIR VALVES, LINES, FITTINGS	21		MAST ASSEMBLY, BOOM
21			22		GANTRY SHEAVES, CABLES, PINS, LOCKS
22			23		SAFETY CHAINS
23			24		TRACK ASSEMBLY (PLATES, LINKS, BUSHINGS, PINS, IDLER, ROLLERS, SPRINGS, BUSHINGS)
F	S S	SKIDS / FRAME AND SUSPENSION	25		TRACK TENSION
			26		FIFTH WHEEL, TOW, HITCH, PINTLE, HOOK
			27		YOKE ASSEMBLY
1		FRAME (CRACKS, WELDS, ALIGNMENT)	28		TAILGATE, BOWL, HINGE PINS, EJECTOR, APRON
2		GUARDS AND OUTRIGGERS (CYLINDERS, HOSES)	29		STOPLOCK SPRINGS
3		SPRINGS, EQUALIZERS, STABILIZERS	30		CENTER PIN OR GUDGEON
4		TIRES (PRESSURE, CONDITION)	31		AIR LINES AND CONNECTIONS
5		FRONT AXLE ASSEMBLY, WHEELS (BEARINGS, MOUNTS, BALL JOINTS)	32		DUCT, DUCT HOUSING, CABLE ASSEMBLY
6		REAR AXLE ASSEMBLY, WHEELS (BEARINGS, MOUNTS, BALL JOINTS)	33		PLENUMS
7		"A" FRAME OR YOKE, PUSH BEAMS			
PAGE 3					

G	S S	ATTACHMENTS / BLADES / CUTTING EDGES (Check applicable block in lines 1 through 5)	H	S S	PUMPS AND COMPRESSORS (CONTINUED)
1	✓	<input type="checkbox"/> AUGER <input type="checkbox"/> BACKHOE <input checked="" type="checkbox"/> BLADES	12		CYLINDER HEADS (GASKETS, CRACKS, LEAKS)
2	N/A	<input type="checkbox"/> BUCKET <input type="checkbox"/> BUCKET MULTIPURPOSE <input type="checkbox"/> CLAMSHELL	13		CRANKCASE (LEAKS, OIL LEVEL)
3	N/A	<input type="checkbox"/> COMPACTOR VIBRATOR <input type="checkbox"/> DRAGLINE <input type="checkbox"/> FORKS	14		GAUGES (OIL, AIR)
4	✓	<input type="checkbox"/> HAMMER IMPACT <input checked="" type="checkbox"/> WINCH <input type="checkbox"/> PILE DRIVER	15		UNLOADERS
5	N/A	<input type="checkbox"/> RIPPER <input type="checkbox"/> SCRAPERS <input type="checkbox"/>	16		LINE OILERS (CONNECTIONS, STRAINERS)
6	✓	DRUMS, SHEAVES, CABLES, LEADS AND GUIDES	17		SPRINKLING SYSTEM (TANKS, LINES, MOUNTING)
7	✓	CUTTING EDGES, CORNER SHOES, BOOTS, END BITS, TEETH	18		CONTROLS
8	N/A	SKIPPER SHAFT AND SADDLE BLOCK ASSEMBLY	19		TOOLS / ACCESSORIES (PNEUMATIC TOOL OUTFIT)
9	N/A	TAGLINE, GANTRY, HAMMER LEADS, BLOCKS	20		
10	✓	DRAWBAR, SCARIFIER, CIRCLE	21		
11	✓	HYDRAULIC LINES / CYLINDERS	22		
12					
13					
H	S S	<div> <div>PUMPS AND COMPRESSORS</div> <div> <div>WATER</div> <div>HYDRAULIC</div> <div>PNEUMATIC</div> </div> </div>	1	S	MOBILE ELECTRIC POWER GENERATING SOURCE (Complete engine and power unit section before proceeding)
			2	S	
1		RESERVOIR, TANK (LEAKS, CRACKS, WELDS, BREATHERS, FILTERS, STRAINERS)	3		GOVERNOR ASSEMBLY (MODULES, TERMINALS, ADJUSTMENTS, CONNECTORS)
2		PUMP (MOUNTING, HOUSING) OUTPUT ____ PSI ____ GPM	4		ALTERNATOR ASSEMBLY (BEARINGS, STARTER, ROTOR, DIODES, COOLING FAN, INTAKES, FLEXIBLE COUPLING)
3		RELIEF VALVES ____ PSI	5		ELECTRIC / ELECTRONIC WIRING HARNESSES, CONNECTORS
4		CONTROL VALVES (LINKAGE, LEVERS) CUT IN PRESSURE ____ PSI CUT OUT PRESSURE ____ PSI	6		PLUG-IN MODULES, CONTACTORS
5		VALVES (FLOW, CHECK)	7		PRINTED CIRCUIT BOARDS (CRACKS, DIRT, CONFORMAL COATING, COMPONENT MOUNTING)
6		CYLINDERS (LEAKS, MOUNTING)	8		CONTROL CABINET (MOUNTS, CONNECTORS, COMPONENT MOUNTING)
7		HOSES AND CONNECTIONS (LEAKS, CRACKS)	9		PROTECTIVE CIRCUIT (OPERATION, TRIP POINT RANGES)
8		FILTERS / STRAINERS	10		CABLES (REMOTE OPERATION, PARALLELING, CONNECTIONS)
9		SHAFT, COUPLING, BEARINGS	11		HOUSING (SEALS, COMPARTMENTS, FASTENERS, MARKINGS)
10		IMPELLER, DIAPHRAGM	12		AUXILIARY WINTERIZATION KIT (COMPLETENESS, OPERATION)
11		INTER COOLER, RELIEF VALVE ASSEMBLY, LINES	13		TERMINAL BOARD
					VOLTAGE REGULATOR
					RELAYS

J	S	REFRIGERATION / AIR CONDITIONING	L	S	CHAIN AND POWER SAW (Complete engine and power unit section before proceeding)
1		COMPRESSOR	1		TABLE TILTING SCREW
2		BELTS, PULLEYS, SHEAVES	2		COLUMN BASE AND FRAME
3		METERING DEVICE	3		SPROCKET AND CHAIN (OILER)
4		EVAPORATOR COIL	4		SAW GUARDS
5		CONDENSER COIL	5		MITRE GAUGE
6		TEMPERATURE CONTROLS	6		BLADES (CONDITION)
7		SIGHT GLASS	7		STARTER RECOIL SYSTEMS
8		GASKET, DOOR	M	S	MARINE EQUIPMENT (Complete engine and power unit section before proceeding)
9		REFRIGERANT (SHORT, HIGH)		S	
10		LEAKS (OIL, REFRIGERANT)	1		HULL (LEAKS, CRACKS, BROKEN, MISSING)
11		TIMER DEFROST	2		ELECTRICAL (RADAR, RADIO, LIGHTS)
12		VALVES (SERVICE, PRESSURE, REGULATING, SOLENOID, CHECK)	3		CREW SERVED ARMAMENT
13		RELAYS / CONTACTORS	4		PROPULSION EQUIPMENT
14		CONTROL BOX	5		TRAILER (TIRES, FRAME, LIGHTS)
15		HOUSINGS	6		
16		STATOR / ROTOR / END BELLS / BEARINGS	7		
17		MOUNTINGS	8		
18		CAPACITORS	9		
19		ELECTRICAL SWITCHES AND CONNECTORS AND WIRING	10		
K	S	WATER SUPPLY EQUIPMENT (Check Power Supply, Pumps first)	11		
	S		12		
1		CHLORINE, CYLINDER OR BAG CHLORINE (TEST FEED)	13		
2		PRESSURE REGULATOR (CHLORINE)	14		
3		VALVES AND STRAINERS	15		
4		FILTER SECTION	16		
5		TANKS	17		

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SERVICES TO BE PERFORMED (SS)		WORKSHEET FOR PREVENTIVE MAINTENANCE AND TECHNICAL INSPECTION FOR ENGINEER EQUIPMENT				LEGEND (SS)					
A - ADJUST C - CLEAN I - INSPECT S - SERVICE T - TIGHTEN		APPLICABLE REFERENCES (SEE INSTRUCTIONS ON PAGE 6) TM 4700 - 15/1_ (TACTICAL EQUIPMENT RECORD PROCEDURES)				N/A - NOT APPLICABLE M - MISSING ✓ - SATISFACTORY X - ADJUSTMENT REQUIRED XX - REPAIR REQUIRED XXX - REPLACEMENT REQUIRED D - IMMEDIATE D/L U - UNSATISFACTORY MR - MODIFICATIONS REQUIRED					
A	NOMENCLATURE	Tractor, Medium, Full Tracked		MAKE	Caterpillar		MODEL	D7G			
	ORGANIZATION	7th ESB		DATE	3249	HOURS	832	MILES	N/A	REGISTRATION NO	586655
	ENGINE MAKE / MODEL (IF APPLICABLE, LIST BOTH ENGINES)		ENGINE SERIAL NO. (IF APPLICABLE, LIST BOTH ENGINES)		ATTACHMENTS		Winch				
	1. Caterpillar 3306		1. 08Z40429		MAKE AND MODEL		Caterpillar / Model 57				
	2. (USE ADDITIONAL FORM)		2. (USE ADDITIONAL FORM)		SERIAL NO.		29V04780				
<div><input checked="" type="checkbox"/> EQUIPMENT RECORD FOLDER</div> <div><input checked="" type="checkbox"/> PUBLICATIONS AVAILABLE</div> <div><input checked="" type="checkbox"/> APPEARANCE</div> <div><input checked="" type="checkbox"/> OPERATOR'S DAILY PM</div> <div>N/A FIRE EXTINGUISHER</div> <div>N/A TOOLS AND EQUIPMENT</div>											
B	REMARKS AND RECOMMENDATIONS / DISPOSITION INSTRUCTIONS										
	D-2 Exhaust rain cap missing D-9 Water pump cover gasket leaks D-11 Fan belts worn and cracked D-21 Fuel priming pump handle broken D-36 Broken wire to R/S working light										
C	ITEM COST (CURRENT)	EQUIPMENT AGE		REPAIR LIMIT		EST. COST THIS REPAIR		CONDITION CODE			
	\$	YEARS _____ MONTHS _____		% ONE TIME COST LIMIT		\$					

NAVMC 10560 (REV. 9-92) ALL OTHER EDITIONS ARE OBSOLETE

PAGE 1

SN: 0000 00 006-0104

When working on Tactical Engineer Equipment

- The Equipment Repair Order (ERO) will be used with the NAVMC 10560 to record PMCS and CM services.
- The Equipment Repair Order Shopping / Transaction List will be used to request parts.

Filling and Disposition

- Requirements listed in 'Section B' must be transferred to an ERO.
- After the Maintenance Officer / Chief verifies that the requirements have been transferred, the NAVMC 10560 may be destroyed.

Questions



NAVMC 10245

Equipment Repair
Order (ERO)

Purpose

- Used to request equipment services and maintenance. Record and Report Maintenance performed.
 - Includes but not limited to:
 - Preventive maintenance
 - Corrective maintenance
 - Limited Technical Inspections
 - Modifications
 - Calibration

Responsibilities

- The equipment owner, user or custodian is responsible for initial preparation to include the heading and description of work.
- The maintenance activity will receipt for the equipment by completing the 'ERO', 'Accepted By' and 'Date (DRIS)' blocks.
- Maintenance will enter information on work performed and close the ERO when all work is completed.

Category Codes

- ‘M’ – Combat essential deadline equipment requiring critical repairs.
- ‘N’ – Equipment requiring non-critical repairs.
- ‘P’ – Non-combat essential equipment requiring critical repairs.
- ‘X’ – Combat essential equipment requiring critical repairs that does not deadline the equipment, but does degrade its operational capability.

Composition / Disposition

- White Copy – Original: Returned to owning/using unit and filed in Equipment Record Jacket for minimum of one year.
- Pink Copy – Administrative Copy: Maintained by MIMMS Clerk for keypunch purposes, destroyed when repairs are complete.

Composition /Disposition (cont)

- Green Copy – Shop Copy: Mechanics working copy, kept on file for one year in maintenance shop.
- Yellow Copy – Receipt Copy: Owning units receipt for equipment while at maintenance. Destroyed by maintenance when repairs are complete and equipment is returned.

Questions



NAVMC 10925

Equipment Repair Order
Shopping/Transaction List
(EROSL)

Purpose

- Used in conjunction with the ERO to requisition, receipt for, cancel and record partial issues and credits of repair parts.

Configuration

- **Made into carbon paper for multiple copies**

UNIT 7th ESB (Maint) DATE 3249 MAINT. _____
DATE / INIT. SUPPLY-IP _____
DATE / INIT. DATA CLERK _____
DATE / INIT.

MATERIAL USAGE CODE: 6 7 8 9 SHOP SECTION 2

A. SL-4-08757A D. _____ G. _____ J. _____ M. _____ P. Mechanic

Tractor, D7G _____

C. 586655 F. _____ I. _____ L. _____ O. _____ R. _____ Shop Officer / CO Signature

Signature																															
4	Y W 0 4 0	2 9 9 0 0 0 2 5 1 3 6 5 6 0 0 1	7	0 6	E A B K 5 S 2 0 0 1 0 7 0 0 1 T	R E	R a i n	Cap	A																						
							U/P \$																								
							T/P \$																								
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							T/P \$																								
4		2 9 1 0 0 1 1 5 4 6 9 0 7 0 0 1	7	0 6	E A	R E	P r i m i n g	P u m p	A																						
							U/P \$																								
							T/P \$																								
4		5 3 3 0 0 1 0 2 4 4 8 6 2 0 0 1	7	0 6	E A	R E	P u m p	G s k t	A																						
							U/P \$																								
							T/P \$																								

Material Usage Codes

- '6' – is for SL-3 components.
- '7' – is used for corrective maintenance parts.
- '8' – is for modification parts.
- '9' – is used for preventive maintenance parts.

Special Instructions

- EROSL will be annotated as to date and quantity of parts received.
- EROSL will be annotated by mechanic or shop chief when parts are removed from ERO Bin for installation.

Disposition

- EROSL is joined with Original ERO once information has been processed by the issue point / keypunch center.
- EROSL may be destroyed after the ERO has been closed.

